Buccal Mucosa Ureteroplasty for the Treatment of Complex Ureteric Injury

Sagar Sadhu · Kuntal Pandit · Manas K. Roy ·
Suresh K. Bajoria

Received: 2 September 2008 / Accepted: 8 February 2009 / Published online: 3 December 2010
© Association of Surgeons of India 2010

Abstract Bowel interposition and auto-transplantation of kidney, thought to be a major undertaking, remain the traditional option for the treatment of major and complex ureteric lesions. Buccal mucosa, a well known tissue for urethral reconstruction, can be used safely for the repair of ureter. However, this has been reported poorly in the literature. Here we report a 59-year-old female who had a major ureteric injury by Dormia basket during ureteroscopic extraction of a 2.6 cm impacted stone at pelvi-ureteric junction. On exploration, a long anterior slit was found in the upper ureter measuring approximately 8 cm. It was successfully repaired by free buccal mucosal patch graft over a Double J stent. Thus, a major surgery was avoided. Intra venous urography at 6-month follow up demonstrated a patent ureter. Our experience is encouraging and merits wider application in complex ureteric lesion.

Keywords Ureteroplasty · Buccal mucosa

Introduction

Buccal mucosal graft (BMG) is used extensively for urethral reconstruction. However, there are only scant reports in the literature describing ureteroplasty with BMG. Here we report a successful repair of an iatrogenic ureteric injury by free buccal mucosal graft. The ureteric injury occurred during ureteroscopic manipulation and the repair using BMG avoided complex operations like ileal interposition or auto-transplantation of kidney.

Case

A 67-year-old female, known hypertensive, had presented with right flank pain and intermittent fever with chills and rigors for last 1 year. Systemic examination was essentially normal. Abdominal ultrasonography showed a 2.6 cm elongated radio-opaque stone at the pelvi-ureteric junction on the right side with moderate hydronephrosis. Subsequent intravenous urography (IVU) demonstrated functioning kidney on both the sides. Routine pre-surgical blood tests were within normal limits, while urine culture and sensitivity tests failed to demonstrate any infection. An elective percutaneous nephrolithotomy was planned. During the initial retrograde pyelography, it was realized that the stone could be approached easily by ureteroscope. Hence, ureteroscope was introduced and pneumatic lithoclasts used to fragment the stone. The stone fragments were removed by Dormia basket and grasper. While retrieving a relatively large fragment, the anterior wall of the right upper ureter suddenly gave away. It became apparent that there has been a longitudinal tear of the ureter, which mandated open surgical exploration. A pararectus muscle cutting incision was made to expose ureter retroperitoneally. This revealed a longitudinal tear over the anterior wall of the upper-ureter and that measured approximately 8 cm in length. Since the ureter was unhealthy at the site of injury, it required trimming to refresh the margins. This was repaired by a suitable length of buccal mucosa, harvested from the right inner cheek. The patch was trimmed to match the defect and sutured to the edges of the ureter with 4/0 Vicryl® interruptedly (Photograph 1). The area of repair was liberally covered with surrounding fatty tissue. A Double J (DJ) stent was then negotiated through the repaired area. A tube was placed in the retroperitoneum and abdomen was closed in layers.

S. Sadhu (✉) · K. Pandit · M. K. Roy · S. K. Bajoria
Rabindranath Tagore International Institute of Cardiac Sciences,
Kolkata, India
e-mail: drsagar@rediffmail.com

Photograph 1 Ureter after BMG patch repair

Photograph 2 IVU showing ureteric patency after 6 months

The drain was removed on the 5th post-operative day. On the next day, small amount of urine was found to be leaking from the drain-puncture wound. This was managed conservatively and ultrasonography did not show any significant collection in the retroperitoneum. The patient was kept under observation for another 3 days and discharged home with the DJ stent in situ, which was subsequently removed after 3 months. A check IVU performed after 6 months of surgery demonstrated a patent ureter (Photograph 2).

Discussion

Traumatic injury over a significant length of ureter poses formidable challenge. The options for dealing with such complex ureteric injuries are repair with bowel interposition or auto-transplantation of kidney. Bowel interposition, although safe, is associated with complications like mucous plugging, recurrent pyelonephritis, anastomotic stricture, recurrent stone and chronic renal failure [1]. Similarly, auto-transplantation of kidney is a major undertaking. These are complex procedures and become even more difficult in unprepared patient under emergency situation. To circumvent such complex procedures, we chose BMG as an alternative material to repair the defect. Duckett et al had popularized the successful use of BMG in the treatment of complicated hypospadias and urethral reconstruction [2]. Owing to its excellent take-up and simplicity of harvesting, BMG has become a popular and an important source of

tissue for urethral reconstruction. The technique subsequently found favour in treating ureteric lesions, but there are only scant published reports. Naude JH had reported successful use of BMG patch in 5 patients and tubularized graft interposition in 1 patient to bridge lost segment for benign ureteric stricture. Ureteric patency was established and maintained in all the patients [3]. Similar was the experience of Shah et al who repaired complicated benign ureteric stricture in 5 patients with BMG patch [4]. These authors have used omental wrap on the grafted site, with the intent to augment vascularity. We did not apply omentum; instead, we covered the graft by surrounding fatty tissue. There was minor transient urine leak, which settled spontaneously. Our experience, and the few published series suggest an immense potential for this simple technique for complex ureteral injury and merits wider application.

References

1. Chung BI, Hamawy KJ, Zinman LN, Libertino JA (2006) The use of bowel for ureteral replacement for complex ureteral reconstruction: long term results. *J Urol* 175(1):179–183
2. Duckett JW, Coplen D, Baskin LS (1995) Buccal mucosal urethral replacement. *J Urol* 153:1660–1663
3. Naude JH (1999) Buccal mucosal graft in the treatment of ureteric lesions. *BJU Int* 83:751–754
4. Shah SA, Ranka P, Visnagara M, Dodia S, Jain R (2003) Use of buccal mucosa as onlay graft technique for benign ureteric strictures. *Indian J Urol* 20:28–32